Sheet 3

1- An air filled parallel-plate waveguide has W= 100mm,d=25mm operating for TEM mode at 500 MHz

a) **Calculate the voltage between the two plates assume Vo = 2 volt.**
b) **The current flow through the conductor.**
c) **TEM wave impedance**
d) **Transverse components**
e) **Characteristic impedance**
f) **Phase velocity**

2- A parallel-plate waveguide has W= 100mm, d=25mm is filled with Єr=4 . Find the cut off frequencies and the cut off wave lengths for the modes TM1,TM2 and TM3.

3- An air filled parallel-plate waveguide has W= 10 cm ,d=25mm. How many TMn modes will this guide transmit at frequency below 4GHz . and what are their cut off f frequencies ?

4- An air filled parallel-plate waveguide has W= 10 cm ,d=0.5cm for TM modes. What is the operating frequency we must use to

- **Propagate the first mode only**
- **Propagate the first and the second modes only**

5- Repeat problem 2,3and 4 For TE mode